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Antecedent and current theories of achievement motivation are stated, and a broader theory of achievement motivation presented, which attends to the effects of anticipated future achievement goals on present achievement oriented behavior. This broader theory suggests that an individual's characteristic achievement motivation is accentuated when present performance is perceived as instrumental in attaining future achievement goals. Research evidence is given in support of this proposition. A mathematical model of the proposed theory is presented, giving the total resultant tendency to achieve as a multiplicative function of motive, expectancy, and incentive, perceived as a subjective, compound probability. Extrinsic motivation may also be increased when the activity has future implications. The individual's cognitive structure becomes important in predicting differential effects of achievement motivation. (BP)

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The functional significance of future goals[1]

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The theory of achievement motivation is concerned with stating the functional significance of variables which influence an achievement-oriented act in a particular achievement-oriented situation. As pointed out by Feather (1959) and others, the theory is a particular example of the Expectancy - Value approach, which assumes that strength of tendency to act in a certain way depends upon the strength of expectancy that an act will be followed by a consequence, and the value of that consequence to the individual. In the present paper it is suggested that a more general statement of the theory of achievement motivation, based upon the principles of Expectancy - Value theory, provides a means of conceptualizing some recent empirical findings. These concern what has variously been referred to as the "salience", "relevance", or "importance" of achievement-oriented behavior. The findings suggest that an individual's characteristic achievement motivation for a particular achievement-oriented activity is increased when present performance is seen by the individual as instrumental to the attainment of other, future, achievement goals.

As shown by Equations 1 to 3 of the Handout, the theory of achievement motivation, as stated by Atkinson and Feather (1966), assumes among other things that the direction, vigor, and persistence of a particular achievement-oriented act is determined by the

resultant tendency to achieve. This resultant tendency is obtained by the algebraic summation of the tendency to achieve success and the tendency to avoid failure. These tendencies are assumed multiplicative functions of three variables: motive, expectancy or subjective probability, and incentive value. The motives to achieve success and to avoid failure are considered the personality determinants of the resultant tendency to achieve. The probabilities of success and failure, and the incentive values of success and failure, are considered the situational determinants of the resultant tendency to achieve. In the language of Expectancy - Value theory, subjective probability represents the Expectancy variable, and the product of motive and incentive represents the Value variable.

As shown by Equations 4 and 5, in the theory of achievement motivation two special assumptions are made concerning the relationship between subjective probability and incentive value: (1) the incentive value of success is assumed equal to one minus the subjective probability of success, and (2) the negative incentive value of failure is assumed equal to the subjective probability of success. It is also assumed that the subjective probabilities of success and failure vary between zero and one, and summate to one. As shown by Equations 7 to 9 of the Handout, when these assumptions are stated algebraically, and then simplified, it is seen that the subjective probability of success is the sole situational determinant of the resultant tendency to achieve.

The curremt statement of the theory of achievement motivation is challenged by results of several recent unpublished studies conducted at the University of Michigan. The following consistent

pattern of results has emerged: the characteristic effects of achievement-related motives are accentuated when students perceive their present achievement-oriented behavior as instrumental to the attainment of their own future career goals. For example, as shown by Section F of the Handout on page 2, in a study conducted by Raynor (in preparation) the expected relationship between achievement-related motive measures and college grades was found: those male college students relatively higher in Need for Achievement than Test Anxiety (that is, those relatively stronger in the motive to achieve success than the motive to avoid failure) tended to receive higher grades in introductory psychology than those students relatively higher in Test Anxiety than Need for Achievement (that is, those relatively stronger in motive to avoid failure than motive to achieve). However, within the group relatively stronger in motive to achieve, students tended to receive <u>higher</u> grades when the particular course grade was seen as "helpful" and "important" to their own future career success than when it was not. On the other hand, within the group relatively stronger in the motive to avoid failure, students tended to receive <u>lower</u> grades when the grade was seen as "helpful" and "important" to their own future career success than when it was not. Isaacson and Raynor (1966) had previously found a similar trend using extreme Debilitating Anxiety scores to infer male college students' relative strength of achievement-related motives. In other words, in these two studies there was an accentuation of the predicted relationship between achievement-related motive measures and present academic performance for those male college students who saw their course performance as

instrumental to two kinds of consequences, one immediate, success or failure in the particular course, and one in the future, success or failure in their future career.

This kind of result is anticipated in the work and arguments of others, such as Helen Peak (1955), Thomas and Zander (1959), Nuttin (1964), Vroom (1964), and Isaacson (1965). However, it is not predicted by the theory of achievement motivation, which assumes that the sole situational determinant of the resultant tendency to achieve is the subjective probability of success in a particular achievement-oriented activity. The theory of achievement motivation does not consider the possible influence of the expectations of success and failure at some future achievement-oriented activity, and the value of these consequences to the individual, on strength of resultant tendency to achieve. In this sense the theory of achievement motivation is a limited statement of the more general Expectancy - Value approach, which assumes that strength of tendency to act in a certain way depends upon strength of expectancy that an act will be followed by a consequence, and the value of that consequence to the individual, summated over all possible consequences.

It is now suggested that a more general statement of the theory of achievement motivation, based upon the principles of general Expectancy - Value theory, provides a means of conceptualizing the motivational significance of anticipated distant future goals. These principles were previously used in the theory of achievement motivation to take account of the fact that an individual sometimes engages in what appears to be achievement-oriented behavior in order to attain incentives which are extrinsic

to achievement concerns, such as money, power, or the approval of others. It was assumed that sources of extrinsic tendency to act summate algebraically with tendency to achieve and tendency to avoid failure to determine total strength of tendency in a particular situation. This assumption was consistent with empirical findings, as noted by Atkinson and Feather (1966, pp. 333-334). The logic of algebraic summation of tendencies, each representing a multiplicative function of motive, expectancy, and incentive, will now be applied to the case where the individual is simultaneously motivated to achieve success or avoid failure at a particular achievement-oriented activity and at one or more future achievement-oriented activities.

It will be assumed that when a particular achievement-oriented activity having an immediate goal is also seen by the individual as a step in a path, possibly a very long path, leading to some future achievement goal, there is a general intensification of the individual's characteristic achievement motivation concerning the activity. More specifically, under certain conditions to be specified, each activity in a particular path or sequence of achievement-oriented activities is assumed to determine a tendency to achieve success and a tendency to avoid failure. As shown by Equations 10 to 14 of the Handout, these tendencies, each represented as a multiplicative function of motive, expectancy, and incentive, are then summated over all achievement-oriented activities in that particular path or sequence. This yields the total resultant tendency to achieve which motivates achievement-oriented behavior on the present or immediate activity of that path.

The conditions required in order for this more general model to apply are the following: (1) a particular achievement-oriented activity is seen by the individual as part of a path or sequence of achievement-oriented activities leading to several achievement goals; (2) success at each activity of that path or sequence is necessary to attain success at the subsequent activity in that path; (3) failure at any activity in the sequence leads to failure at all subsequent activities in that particular path.

From Equations 15 and 16 of the Handout it is seen that, as in previous statements of the theory of achievement motivation, the two special assumptions concerning the relationship between incentive value and subjective probability are maintained: incentive value of success equals one minus the subjective probability of success, and negative incentive value of failure equals subjective probability of success. In addition, as shown by Equation 17 of the Handout, it is assumed that for any activity in a particular path or sequence, subjective probability of success is represented by the product of the subjective probabilities at each prior activity in that path. This compound probability is used to determine the incentive values of success and failure for that activity, as seen by the individual prior to performance on the present or immediate activity. The compound subjective probability is also used to determine the contribution to the total resultant tendency to achieve of each activity seen by the individual in the particular path of which the present activity is a part.

The previous statement of the theory of ~~the theory of~~ achievement motivation is a special case of the more general theory presented here. That is, it can be shown that when a particular

achievement-oriented activity is considered as an end in itself, not leading on to future achievement goals, the previous algebraic statement of the theory and the more general statement of the theory are equivalent.

The more general statement of the theory of achievement motivation presented here focuses attention on the future implications of present achievement-oriented behavior. It is to be noted that this model assumes that anticipated future consequences of present behavior differentially effect individuals, depending upon their relative strengths of achievement-related motives. For those individuals in whom motive to achieve success is relatively stronger than motive to avoid failure, anticipated future achievement consequences increase positive or approach achievement motivation for the present activity; for those in whom motive to avoid failure is relatively stronger than motive to achieve, anticipated future achievement consequences increase negative or avoidance achievement motivation for the present activity. These assumptions are consistent with the empirical findings cited earlier.

It also becomes important to know the cognitive structure of the individual, represented in the theory by expectations that a particular achievement-oriented act may lead to both immediate and more distant achievement consequences. For example, it can be derived from this more general statement of the theory that present achievement motivation is in part a function of the number of anticipated future achievement incentives: that is, the greater the number of achievement-oriented activities that are seen by the individual in a particular path or sequence, the greater the

accentuation of his characteristic achievement motivation for the first activity of that path. It can also be derived from this model that present achievement motivation is in part a function of the magnitudes of the subjective probabilities of success at each activity in a particular sequence of achievement-oriented activities: in general, the higher the value of these subjective probabilities, the greater the accentuation of characteristic achievement motivation for the first activity.

There are other interesting implications of this model which might be discussed, but time does not permit this here. But it seems clear that future research on achievement motivation must specify and/or control for the possible future implications to the individual of a particular achievement-oriented activity, ~~for the individual~~, in order to more adequately predict present achievement-oriented behavior. By doing so a particular achievement-oriented activity can then be viewed as taking place within the context of an interrelated series of acts rather than in isolation, which is often the consequence of artifically contrived achievement-oriented situations of the laboratory.

One final point. Extrinsic motivation to act may also be increased when a particular activity has f ture implications. As seen in Equations 19 to 21 of the Handout, conceptualization of the functional significance of anticipated future extrinsic goals follows the same principles of general Expectancy - Value theory outlined here. Extrinsic incentives may represent an important source of motivation in situations where present achievement-oriented behavior is seen by the individual as instrumental to the attainment of socially valued rewards which are contingent upon successful achievement-oriented behavior.

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A. Current statement of the theory of achievement motivation. (Based on Atkinson and Feather, 1966).

1. $T_R = T_S + T_{-F}$

2. $T_S = M_S \times P_S \times I_S$

3. $T_{-F} = M_F \times P_F \times I_F$

4. $I_S = 1 - P_S$

5. $I_F = -P_S$, or $-I_F = P_S$

6. $P_S + P_F = 1$

B. The sole situational determinant of the resultant tendency to achieve (T_R) is the subjective probability of success (P_S) at a particular achievement-oriented activity. (Based on Edwards, 1962, and Atkinson and Feather, 1966).

7. $T_R = (M_S \times P_S \times I_S) + (M_F \times P_F \times I_F)$

8. $T_R = (M_S \times P_S \times (1 - P_S)) + (M_F \times (1 - P_S) \times (-P_S))$

9. $T_R = (M_S - M_F) \cdot (P_S \times (1 - P_S))$

C. General statement of the theory of achievement motivation, based on principles of the Expectancy - Value approach.

10. $T_{R_T} = T_{S_T} + T_{-F_T}$

11. $T_{S_T} = \sum_{g=1}^{G} (T_{S_g})$

12. $T_{-F_T} = \sum_{g=1}^{G} (T_{-F_g})$

13. $T_{S_g} = M_S \times P_{S_g} \times I_{S_g}$

14. $T_{-F_g} = M_F \times P_{F_g} \times I_{F_g}$

15. $I_{S_g} = 1 - P_{S_g}$

16. $I_{F_g} = -P_{S_g}$, or $-I_{F_g} = P_{S_g}$

17. $P_{S_g} = P_{S_g,S_{g-1}} \times P_{S_{g-1},S_{g-2}} \times P_{S_{g-2},S_{g-3}} \times \ldots$,

where $P_{S_g,S_{g-1}}$ represents the subjective probability of success at the g^{th} activity, given success at the $g - 1^{th}$ activity, and $P_{S_{g-1},S_{g-2}}$ represents the subjective probability of success at the $g - 1^{th}$ activity, given success at the $g - 2^{th}$ activity, and so on .

18. $P_{S_g} + P_{F_g} = 1$

D. Extrinsic motivation to act in a particular achievement-oriented situation may also be increased when that activity has future implications.

19. $T_{Ext_T} = \sum_{g=1}^{G} (T_{Ext_g})$

20. $T_{Ext_g} = M_{Ext} \times P_{Ext_g} \times I_{Ext_g}$

D. Extrinsic motivation to act in a particular achievement-oriented situation may also be increased when that activity has future implications.

19. $T_{Ext_T} = \sum_{g=1}^{G} (T_{Ext_g})$

20. $T_{Ext_g} = M_{Ext} \times P_{Ext_g} \times I_{Ext_g}$

E. Therefore, the final tendency to act in a particular achievement-oriented situation (T_{Fin}) may be represented as follows:

21. $T_{Fin} = T_{R_T} + T_{Ext_T}$.

(In all of the above equations, the effects of inertial motivation on strength of tendency to act in a particular situation have not been represented).

F. Joint effects on grades in introductory college courses of achievement-related motive measures and relation of the grade to future career success

		Relation of grade to future career success		
		Low	Intermediate	High
n Achievement-Test Anxiety				
High	Low	3.07[1]	-	3.25
Low	High	3.00	-	2.72
		(From Raynor, in preparation)		
Debilitating Anxiety				
Extreme Low		2.90	3.00	3.13
Extreme High		2.65	2.40	2.36
		(From Isaacson and Raynor, 1966)		

1. A = 4, B = 3, C = 2, D = 1, Fail = 0